

CLAIMS:

1. A display device comprising
 - a display panel (1);
 - a light redirection element (8) for directing light through the display panel (1);
 - a light guide (6) for directing light towards the light redirection element (8);
 - 5 – a first light source (4) coupled to the light guide (6) so as to couple light into the light guide (6) in a first direction; and
 - a second light source (5) coupled to the light guide (6) so as to couple light into the light guide (6) in a second direction;

wherein the light redirection element (8) has a first groove structure (9) and

- 10 the light guide (8) has a second groove structure (7), and the first and second groove structures (9, 7) are arranged in a configuration operable to direct light from the first light source (4) through the display panel (1) with a first angular distribution (2) and light from the second light source (5) with a second angular distribution (3).
- 15 2. A display device as claimed in claim 1, further comprising means for alternating between illumination of the first and second light sources (4, 5) and means for alternating between displaying a first and a second image (21, 23) on the display panel substantially synchronously with alternating between illumination (22, 24) of the first and second light sources (4, 5).
- 20 3. A display device as claimed in claim 1, wherein the first and second groove structures (401, 47) of the light redirection element (400) and the light guide (46) are arranged in an opposed configuration.
- 25 4. A display device as claimed in claim 1, wherein the first groove structure is a prism structure with a substantially triangular cross-section.

5. A display device as claimed in claim 4, wherein an angle (402) of the joining sides forming the triangular cross-section of the prism structure of the first groove structure (401) is between 10° and 70° .
- 5 6. A display device as claimed in claim 1, wherein the second groove structure (47) is a prism structure with a substantially triangular cross-section.
7. A display device as claimed in claim 6, wherein an angle (48) of the joining sides forming the triangular cross-section of the prism structure of the second groove
10 structure is between 150° and 179° .
8. A display device as claimed in claim 1, wherein the first and second groove structures (9, 7) extend in a direction substantially perpendicular to an axis extending between the eyes (11, 12) of a user of the display panel when in use, when the display device
15 is maintained in a position of use.
9. A display device as claimed in claim 1, wherein the light with the first angular distribution (51) is emitted in a first viewing area predominantly containing light from the first light source (4), and wherein the light with the second angular distribution (52) is
20 emitted in a second viewing area predominantly containing light from the second light source (5).
10. A display device as claimed in claim 2, wherein the first and second images are a first and a second image of a 3D stereoscopic image.
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11. A display device as claimed in claim 2, wherein the first image is dedicated for a first user (63) and the second image is dedicated for a second user (64), whereby at least the first and the second user can view different images from a single display device (60).
- 30 12. A display device as claimed in claim 10, wherein the first and second light sources (4, 5) are illuminated simultaneously, whereby a 2D image is displayed on the display device.

13. A display device as claimed in claim 12, wherein the display device comprises means for switching between illuminating the first and second light sources simultaneously, and illuminating the first and second light sources substantially synchronously with displaying the first and the second image on the display panel.

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14. A display device as claimed in claim 1, wherein the first and second light sources are light-emitting diodes (LED) or cold cathode fluorescent lamps.

15. A display device as claimed in claim 1, wherein the display panel is a liquid
10 crystal display (LCD) panel.

16. A display device as claimed in claim 15, wherein the first and second groove structures extend in a direction substantially perpendicular to the rows in an LCD panel.

15 17. A method of displaying data on a display device, the method comprising the steps of:

- coupling light from a first and a second light source (4, 5) into a light guide (6) so as to couple light from the first light source (4) into the light guide (6) in a first direction and light from the second light source (5) into the light guide (6) in a second direction;
- 20 – redirecting the light coupled into the light guide towards a light redirection element by coupling light out of the light guide by an out-coupling surface having a second groove structure (7); and
- further redirecting the light coupled into the light redirection element (8) by coupling
25 light into the light redirection element (8) by an in-coupling surface having a first groove structure (9), such that light from the first light source (4) is directed through the display panel (1) with a first angular distribution and light from the second light source (5) is directed through the display panel (1) with a second angular distribution.

18. A method of displaying data on a display device as claimed in claim 17,
30 wherein the first and second light sources (4, 5) are alternately illuminated substantially synchronously with displaying a first and a second image on the display panel.